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BAKING MACHINE

[Jeipanggi]

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Specification

1. Title of the invention

BAKING MACHINE

2. Brief description of the figures

Figure 1 is an oblique view showing the baking machine of/2 the present invention.

Figure 2 is a cut enlarged oblique view showing a part chamber area of Figure 1.

Figure 3 is a disassembled oblique view showing the main parts of Figure 2 .

Figure 4 is a cut enlarged oblique view showing the part chamber area of the baking machine of another application example.

Figure 5 is a disassembled oblique view showing the main parts of Figure 4.

Figure 6 is a control block diagram of the baking machine of Figures 1 and 4.

Figure 7 shows a sealing pack in which baking materials being used in the baking machine of the present invention are housed.

* Explanation of numerals of the main parts of the figures

7 Sealing pack

10 Oven chamber

11 Upper kneading drum

12 Lower kneading drum

15 Baking tray

20 Part chamber

25 Drum driving part

26 Driving motor

27 Interlocking belt

30, 50 Rotating position detecting parts

31, 51 Rotating signal transfer members

41, 61 Rotating signal detecting sensors

38, 56 One-rotation signal transfer parts

37, 57 Fine rotating signal transfer parts

3. Detailed explanation of the invention

(Purpose of the invention)

(Technical field of the invention and prior art)

The present invention pertains to a baking machine. More specifically, the present invention pertains to a baking machine that can precisely control the drive of kneading drums.

Usually, as baking processes for making breads, since there are complicated processes that prepare materials such as flour, sugar, and baking powder, knead them, ferment the kneaded material, bake it, it is very complicated for general people to

directly make a bread in home, and it is also very difficult to make a satisfactory bread.

Thus, baking machines that automatically carry out the process for kneading, fermenting, and baking the materials is automatically carried out so that general people can easily make a bread have been provided in various shapes up to now.

Among these baking machines, the baking machine presented in Korean Patent No. 1991-10203 is equipped with a pair of kneading drums that are installed parallel with each other at the upper and lower parts of an oven chamber and rotated forward and backward, a baking barrel being interposed between two kneading drums, a heater for heating the inside of the oven chamber, a barcode scanner, etc.

In this baking machine, both ends of a sealing pack in which baking materials such as flour and baking powder are housed are wound on a pair of kneading drums and driven, and the sealing pack is vertically moved for a prescribed time, so that the materials in the sealing pack are kneaded.

Then, after finishing the kneading process, a cutter cuts the sealing pack, and only the kneaded material is left in a baking barrel. Then, the heater heats the inside of the oven chamber and ferments and bakes the kneaded material for a prescribed time, so that a bread is made in the baking barrel.

Thus, in this series of baking processes, the barcode scanner reads a barcode (including baking programs such as kneading time, fermentation time, and baking time in accordance with materials) attached to the sealing pack and transfers it to a control part, and the control part controls the drive of the equipments such as kneading drums and heater in accordance with the information of the read barcode (9).

On the other hand, in this conventional baking machine, since a device that can precisely detect the rotating positions of the kneading drums for vertically reciprocating the sealing pack can control it is not prepared, the sealing pack is likely to be separated from the kneading drum during the operation, the vertical movement of the sealing pack cannot be precisely controlled, and the baking materials are not likely to be properly kneaded.

(Technical problems to be solved by the invention)

Therefore, the purpose of the present invention is provide a baking machine that can precisely control the rotating position of kneading drums.

(Constitution and operation of the invention)

According to the present invention, the above-mentioned purpose is achieved by a baking machine characterized by the fact that in a baking making consisting of a main body in which

an oven chamber and a part chamber are formed, a pair of kneading drums which are installed parallel with a mutually prescribed separation in the above-mentioned oven chamber and rotated forward and backward and on which both ends of a sealing pack containing baking materials are wound, and a drum driving part which is installed in the above-mentioned part chamber and rotates the above-mentioned kneading drums forward band backward, it includes a rotating position detecting part that detects the rotating position of at least one of the above-mentioned one pair of kneading drums and a control part that controls the drive of the above-mentioned drum driving part based on the rotating signal of the above-mentioned kneading drum detected in the above-mentioned rotating position detecting part.

Here, it is preferable for the above-mentioned rotating /3 position detecting part to have a rotating signal transfer member that is prepared at the rotational shaft of the above-mentioned kneading drums and rotates and a rotating signal detecting sensor that detects the rotation of the above-mentioned rotating signal transfer member.

Then, the above-mentioned rotating signal transfer member can precisely control the rotation of the kneading drums by having a one-rotation signal transfer part that is prepared in a

certain region in the circumferential direction of the above-mentioned rotational shaft and transfers a one-rotation signal of the above-mentioned kneading drums and a fine rotating signal transfer part that divides the circumferential area of the above-mentioned rotational shaft into several sections with a mutual equal angle and transfers a rotating position signal of one rotation or less of the above-mentioned kneading drums to the above-mentioned rotating signal detecting sensor.

At that time, the above-mentioned rotating signal transfer member is prepared as a disc member being coupled with the above-mentioned rotational shaft, the above-mentioned fine rotating signal transfer part is formed with a shape of several concave grooves and projections and recessions with a mutually equal interval along the circumferential edge part of the above-mentioned disc member, and the above-mentioned one-rotation signal transfer part can be formed by blocking the concave groove of at least one area of the above-mentioned fine rotating signal transfer part.

Also, the above-mentioned one-rotation signal transfer part may be prepared as a single signal generating projection protruded to the outside in the radial direction from one area of the outer peripheral surface of a ring member being coupled with the above-mentioned rotational shaft, and the above-

mentioned fine rotation transfer part may be prepared in a shape of several concave grooves and recessions and projections with a mutually equal interval along the circumferential edge part of the disc member being coupled with the above-mentioned rotational shaft so that it may be separated from the above-mentioned ring member.

Next, the present invention is explained in detail referring to the attached figures.

Figure 1 is an oblique view showing the baking machine of the present invention, Figure 2 is a cut enlarged oblique view showing a part chamber area of Figure 1, and Figure 3 is a disassembled oblique view showing the main parts of Figure 2. As shown in these figures, the baking machine of the present invention has a main body (1) in which an oven chamber (10) and a part chamber (20) are formed, a door (3) that is installed at the front of the main body (1) and opens and closes the front opening of the oven chamber (10), and an operation display panel (5) which is prepared at one side of the front of the main body (1) and displays an operation state of the equipments.

At the upper part and the lower part in the oven chamber (10), an upper kneading drum (11) and a lower kneading drum (13) on which both ends of a sealing pack (7) of Figure 7 containing baking materials are wound at a prescribed length are installed

parallel with each other and can be rotated forward and backward, and a baking tray (15) on which a kneaded material is housed is prepared at the lower part of the oven chamber (10).

The baking tray (15) has a tubular shape whose upper part is opened by a mutual coupling of a first tray (15a) and a second (15b) with a L shape being symmetric to each other. Also, a pair of kneading latch members (17) that prevent materials being kneaded in the sealing pack (7) from being separated from the upper area of the baking tray (15) are installed at the upper part of the oven chamber (10) between the baking tray (15) and the upper kneading drum (11).

Then, at the upper part and the lower part of the side wall surface of the oven chamber (10) and the upper part and the lower part of the back face of the door (3) facing the oven chamber (10), a baking heater (18) for heating the inside of the oven chamber (10) is installed.

The part chamber (20) consists of a first part chamber (21) being formed at one side of the oven chamber (10) and a second part chamber (23) being formed in the rear area of the oven chamber (10). In the first part chamber (21), a drum driving part (25) for rotating the upper and lower kneading drums (11, 13) forward and backward is installed, and in the second part chamber (23), a barcode scanner (29) for reading a barcode (9)

attached to the surface of the sealing pack (7) being wound on the upper and lower kneading drums (11, 13) is installed.

The drum driving part (25) has a driving motor (26) for rotating the lower kneading drum (13) and an interlocking belt (27) which connects a rotational shaft (28) of the lower kneading drum (13) and the upper kneading drum (11) and interlocks the lower and upper kneading drums (11) [sic; (11, 13)]. Then, the barcode scanner (29) is installed so that it can be contacted and separated to and from the outer peripheral surface of the upper kneading drum (11).

On the other hand, this baking machine includes a rotating position detecting part (30) that detects the rotating position of at least one of the upper and lower kneading drums (11, 13) and a control part (70) that controls the drive of the drum driving part (25) based on the rotating position of the kneading drum detected in the rotating position detecting part (30). Next, for convenience of explanation, an example in which the rotating position detecting part (30) detects the rotating position of the upper kneading drum (11) is explained.

The rotating position detecting part (30) has a rotating signal transfer member (31) being coupled with the rotational shaft (28) of the upper kneading drum (11) and a rotating signal detecting sensor (41) which is installed adjacently to the

rotating signal transfer member (31) in the part chamber (20) and detects the rotation of the rotating signal transfer member (31).

The rotating signal transfer member (31) is formed as a disc member (33) and has an shaft coupling part (35) that can be coupled with the rotational shaft (28) of the upper kneading drum (11) at the center. Then, in the rotating signal transfer member (31), a one-rotation signal transfer part (36) for transferring a one-rotation signal of the upper kneading drum (11) to the rotating signal detecting sensor and a fine rotating signal transfer part (37) for transferring a rotating signal of one rotation or less of the upper kneading drum (11) to the rotating signal detecting sensor (41) are formed.

The fine rotating signal transfer part (37) is formed in a shape of several concave grooves (39) and recessions and projections (38) at a mutually equal interval in the circumferential direction of the circumferential edge part of the disc member (33), and the one-rotation signal transfer part (35) is formed by blocking at least one concave groove (39) of the concave grooves (39) of the fine rotating signal transfer part (37).

The rotating signal detecting sensor (41) has an emitting part (41a) that emits a sensing signal such as infrared rays to

the one-rotation signal transfer part (36) and the fine rotating signal transfer part (37) formed at the circumferential edge part of the rotating signal transfer member (31) and a light receiving part (41b) that is installed oppositely to the emitting part (41a) having a gap with the circumferential edge part of the rotating signal transfer member (31) and receives the sensing signal being emitted from the emitting part (41a).

In the rotating signal detecting sensor (41), the sensing signal being emitted from the emitting part (41a) detects a signal being transferred and cut off to and from the light receiving part (41b) at each fixed period in the section of the concave grooves (39) and the section of the recessions and projections (38) of the fine rotating signal transfer part (37) and detects a fine rotating position of the upper kneading drum (11). Also, the rotating signal detecting sensor (41) detects that the sensing signal cut-off time is formed long, compared with the fine rotating signal transfer part (37), in the one-rotation signal transfer part (36) and detects the one-rotation rotating signal of the upper kneading drum (11).

Then, the rotating position of the upper kneading drum (11) being detected from the rotating signal detecting sensor (41) of the rotating position detecting part (30), as shown in Figure 3, is transferred to the control part (70), and the control part /4

(70) precisely controls the vertical reciprocating moving distance of the sealing pack (7) by controlling the drive of the driving motor (26) of the drum driving part (25) for rotating the upper and lower kneading drums (11, 13) in the kneading process based on that.

On the other hand, Figure 4 is a cut enlarged oblique view showing the part chamber area of the baking machine of another application example, and Figure 5 is a disassembled oblique view showing the main parts of Figure 4. As shown in these figures, in the baking machine of this application example, the general constitution except for the rotating position detecting part (50) has almost the same constitution as that of the baking machine of Figures 1-3. Next, only the rotating position detecting part (50) of this application example is explained.

The rotating position detecting part (50) of this application example, similarly to the above-mentioned application example of Figures 1-3, has a rotating signal transfer member (51) being coupled with the rotational shaft (28) of the upper kneading drum (11) and a rotating signal detecting sensor (61) that is installed adjacently to the rotating signal transfer member (61) in the part chamber (20) and detects the rotation of the rotating signal transfer member (51).

The rotating signal transfer member (51) has a one-rotation signal transfer part (56) that transfers a one-rotation signal to the rotating signal detecting sensor and a fine rotating signal transfer part (57) that is installed with a prescribed separation from the one-rotation signal transfer part (56) and transfers a rotating signal of one rotation or less of the upper kneading drum (11) to the rotating signal detecting sensor (61).

The one-rotation signal transfer part (56) is constituted by a single signal generating projection (74) protruded to the outside in the radial direction from a certain area of the outer peripheral surface of a ring member (73) being coupled with the rotational shaft (28) of the upper kneading drum (11). Then, the fine rotating signal transfer part (57) is formed in a shape of several concave grooves (79) and recessions and projections (78) at a mutually equal interval in the circumferential direction at the circumferential edge part of the rotating member (77) in which a shaft coupling part (76) is formed in the central area so that it can be coupled with the rotational shaft (28) of the upper kneading drum (11). The one-rotation signal transfer part (56) and the fine rotation transfer part are coupled with the rotational shaft (28) of the upper kneading drum (11) with a mutually prescribed separation.

On the other hand, the rotating signal detecting sensor (61) has a first detecting sensor (63) for detecting the rotating signal from the one-rotation signal transfer part (56) and a second detecting sensor (65) for detecting the rotating signal from the fine rotating signal transfer part (57). The first and second detecting sensors (65) [sic; (63, 65)] respectively have emitting parts (63a, 65a) that emit sensing signals such as infrared rays to the one-rotation signal transfer part (56) and the fine rotating signal transfer part (57) in the circumferential area of the rotating signal transfer member (51) and light receiving parts (63b, 65b) that are installed oppositely to the emitting parts (63a, 65a)while interposing each rotating signal transfer part and receives the sensing signals being emitted from the emitting parts (63a, 65a).

Next, in the first and second detecting sensors (65) [sic; (63, 65)], the sensing signals being emitted from the emitting parts (63a, 65a) detect sensing signals being transferred and cut off to and from light receiving parts (63b, 65b) at each fixed period in the signal generating projection (74) of the one-rotation signal transfer part (56) and the section of the concave grooves (79) and the section of the recessions and projections (78) of the fine rotating signal transfer part (57)

and detect a one-rotation position and a fine rotating position of the upper kneading drum (11).

Then, the rotating position of the upper kneading drum (11) being detected from the first and second detecting sensors (65) [sic; (63, 65)] is transferred to the control part (70) as shown in Figure 6, and the control part (70) precisely controls the vertical reciprocating moving distance of the sealing pack (7) by controlling the drive of the driving motor (26) of the drum driving part (25) for rotating the upper and lower kneading drums (11, 13) in the kneading process based on that.

With this constitution, the kneading process of the baking machine of the present invention is explained as follows.

For example, after both ends of the sealing pack (7) are respectively wound as much as the rotation of four rotations of the upper and lower kneading drums (11, 13), if the sealing pack (7) in the kneading process is vertically moved as much as the rotation of three and half rotations of the upper and lower kneading drums (11, 13) in the same direction, when the upper end of the sealing member (7) is initially wound on the upper kneading drum (11), the control part (70) rotates the upper kneading drum (11) forward until the sensing signals of the one-rotation signal transfer parts (36, 56) being detected from the rotating signal detecting sensors (51, 61) are detected 8 times,

and the upper end of the sealing pack (7) is wound on the upper kneading drum (11).

Then, in order to wind the lower end of the sealing pack (7) on the lower winding drum, the driving motor (26) is rotated backward until the sensing signals of the one-rotation signal transfer parts (36, 56) are detected 4 times, and the lower end of the sealing pack (7) is wound on the lower kneading drum (13). At that time, latch projection (12) and a latch hole (3) being meshed with each other are formed on the outer peripheral surfaces of the upper and lower kneading drums (11, 13) and at both ends of the sealing pack (7).

On the other hand, in the kneading process, the sealing pack (7) is moved upward by rotating the driving motor (26) forward until the sensing signals of the one-rotation signal transfer parts (36, 56) three times and the section of the concave grooves (39, 79) of the fine rotating signal transfer parts (37, 57) is detected as much as 1/2. Then, the sealing pack (7) is moved downward by rotating the driving motor (26) backward until the sensing signals of the one-rotation signal transfer parts (36, 56) are detected three times. At this period, the control part (70) vertically reciprocates the sealing pack (7) by rotating the driving motor (26) forward and

backward for a prescribed time preset in the barcode (9), so that the baking materials in the sealing pack (7) are kneaded.

In this manner, with the preparation of the rotating position detection part for detecting the rotating position of at least one of a pair of kneading drums and the control part for controlling the drive of the above-mentioned drum driving part based on the rotating signal of the kneading drum detected in the rotating position detecting part, the rotating positions of the kneading drums can be precisely controlled.

Thus, the sealing pack can be prevented from being separated from the kneading drums during the operation of the baking machine, and the baking materials can be smoothly kneaded by precisely controlling the vertical movement of the sealing pack.

(Effects of the invention)

As explained above, according to the present invention, a baking machine that prevents the sealing pack from being separated from the kneading drums by precisely controlling the rotating position of the kneading drums and can smoothly knead the baking materials is provided.

4. Claims

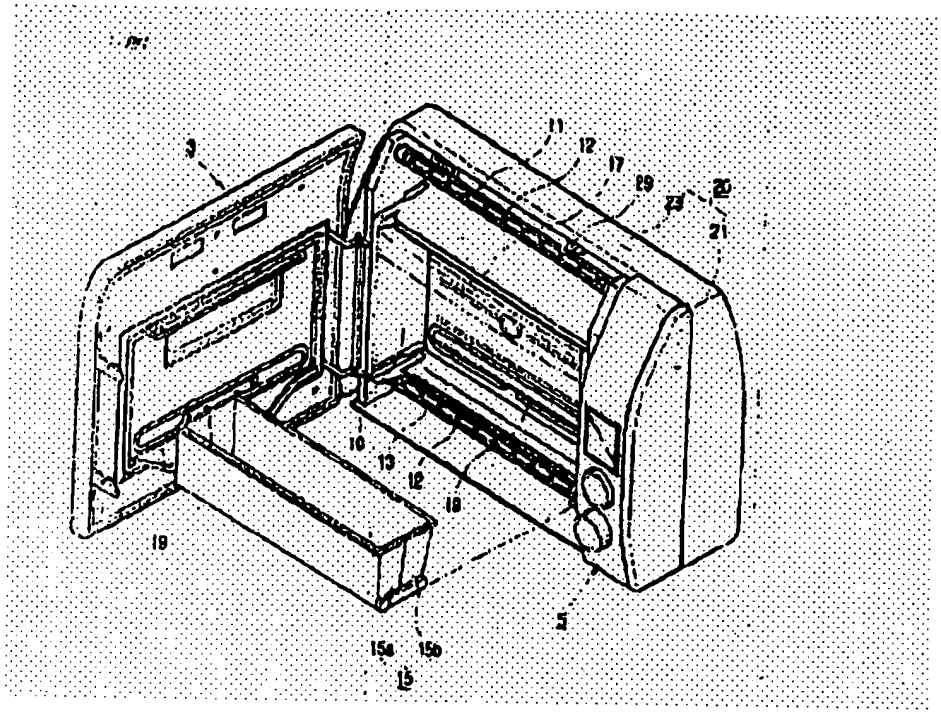
1. A baking machine, characterized by the fact that in /5 a baking making consisting of a main body in which an oven chamber and a part chamber are formed, a pair of kneading drums which are installed parallel with a mutually prescribed separation in the above-mentioned oven chamber and rotated forward and backward and on which both ends of a sealing pack containing baking materials are wound, and a drum driving part which is installed in the above-mentioned part chamber and rotates the above-mentioned kneading drums forward band backward, it includes a rotating position detecting part that detects the rotating position of at least one of the above-mentioned one pair of kneading drums and a control part that controls the drive of the above-mentioned drum driving part based on the rotating signal of the above-mentioned kneading drum detected in the above-mentioned rotating position detecting part.

2. The baking machine of Claim 1, characterized by the fact that the above-mentioned rotating position detecting part has a rotating signal transfer member that is prepared at the rotational shaft of the above-mentioned kneading drums and rotates and a rotating signal detecting sensor that detects the rotation of the above-mentioned rotating signal transfer member.

3. The baking machine of Claim 2, characterized by the fact that the above-mentioned rotating signal transfer member has a one-rotation signal transfer part that is prepared in a certain region in the circumferential direction of the above-mentioned rotational shaft and transfers a one-rotation signal of the above-mentioned kneading drums and a fine rotating signal transfer part that divides the circumferential area of the above-mentioned rotational shaft into several sections with a mutual equal angle and transfers a rotating position signal of one rotation or less of the above-mentioned kneading drums to the above-mentioned rotating signal detecting sensor.

4. The baking machine of Claim 3, characterized by the fact that the above-mentioned rotating signal transfer member is prepared as a disc member being coupled with the above-mentioned rotational shaft; the above-mentioned fine rotating signal transfer part is formed with a shape of several concave grooves and projections and recessions with a mutually equal interval along the circumferential edge part of the above-mentioned disc member; and the above-mentioned one-rotation signal transfer part can be formed by blocking the concave groove of at least one area of the above-mentioned fine rotating signal transfer part.

5. The baking machine of Claim 3, characterized by the fact that the above-mentioned one-rotation signal transfer part is prepared as a single signal generating projection protruded to the outside in the radial direction from one area of the outer peripheral surface of a ring member being coupled with the above-mentioned rotational shaft; and the above-mentioned fine rotation transfer part is prepared in a shape of several concave grooves and recessions and projections with a mutually equal interval along the circumferential edge part of the disc member being coupled with the above-mentioned rotational shaft so that it may be separated from the above-mentioned ring member.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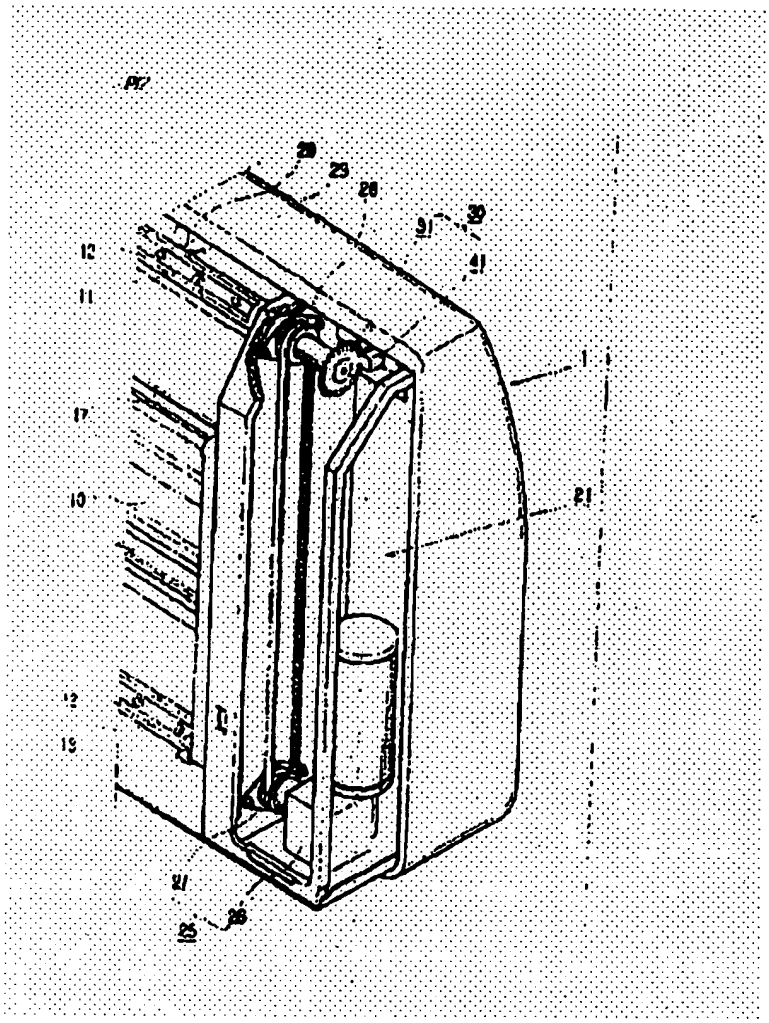

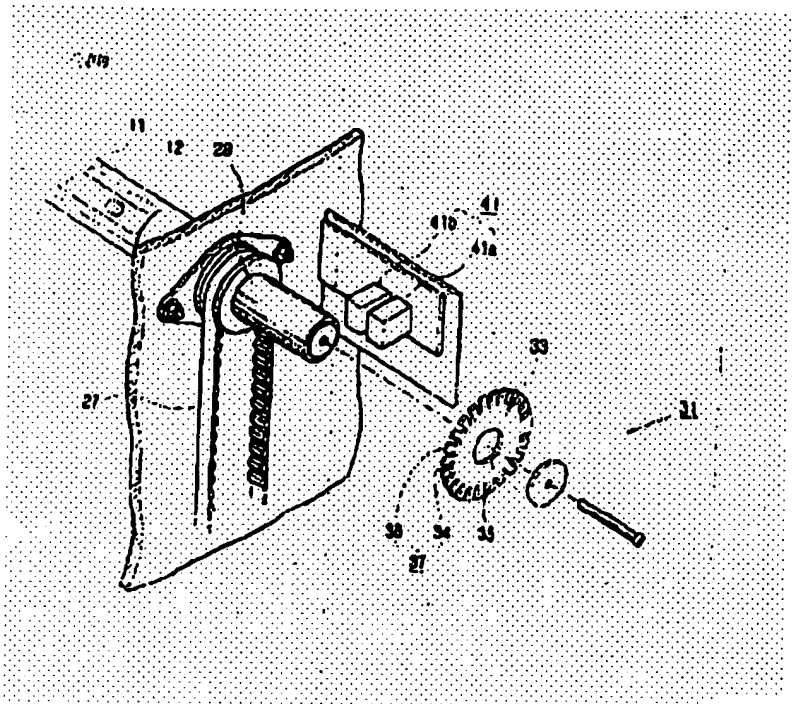
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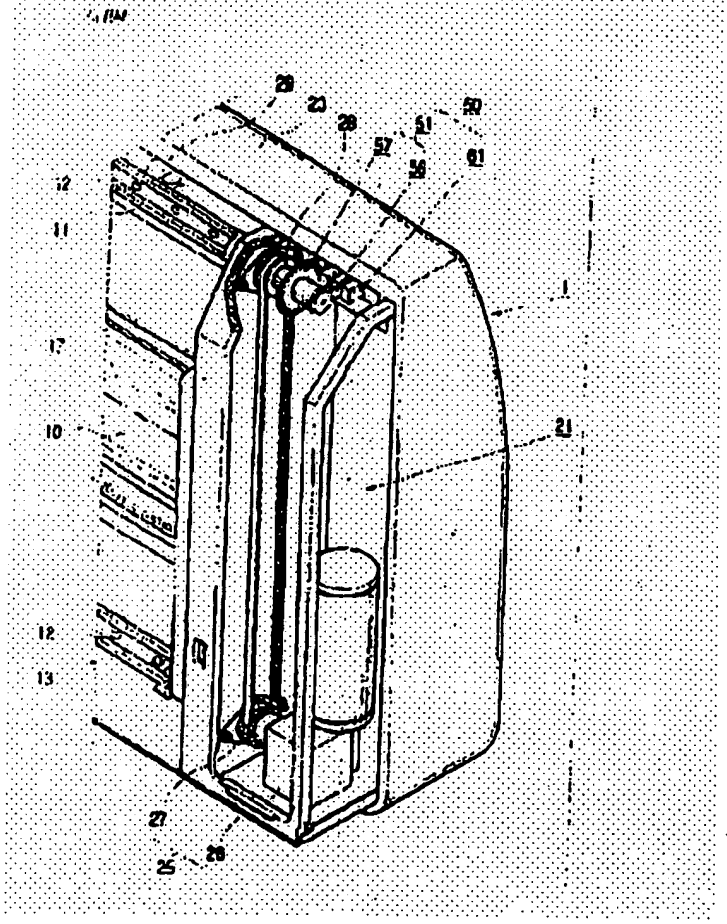
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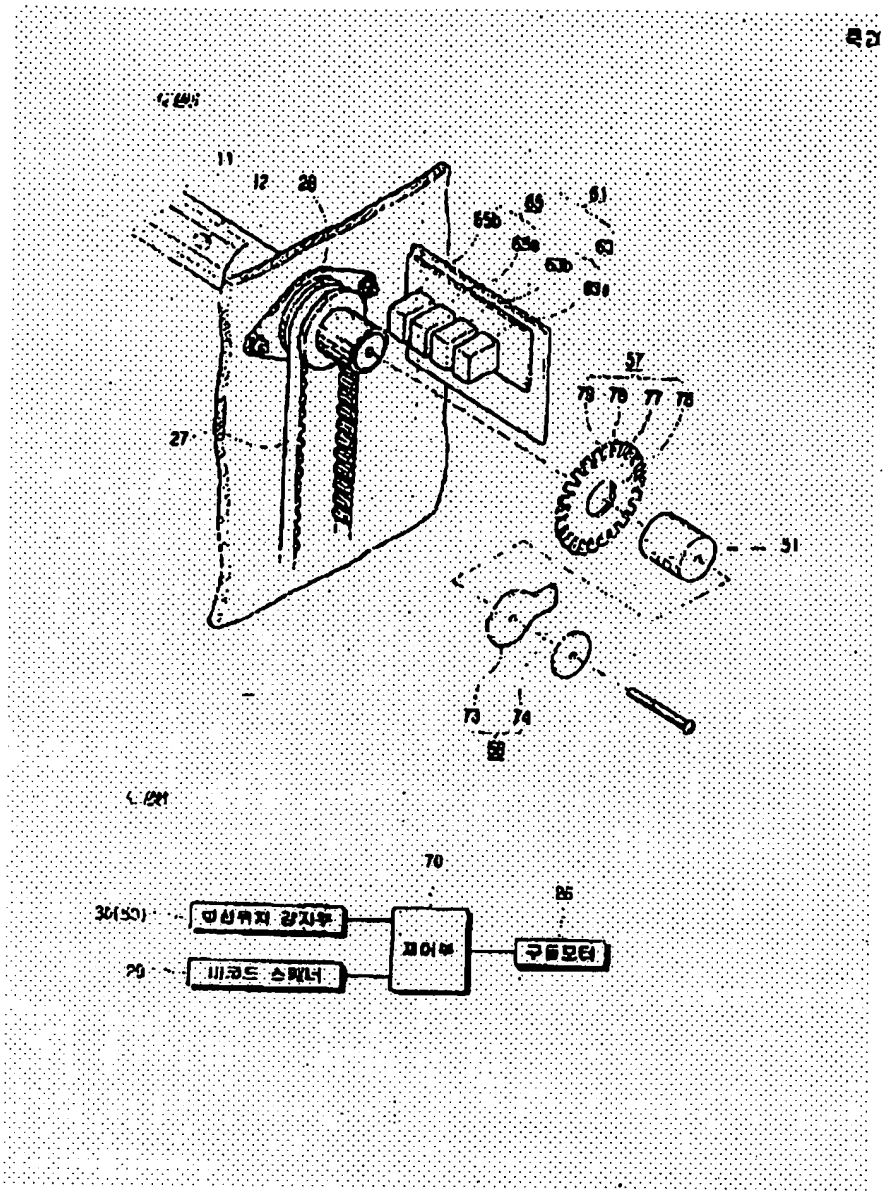
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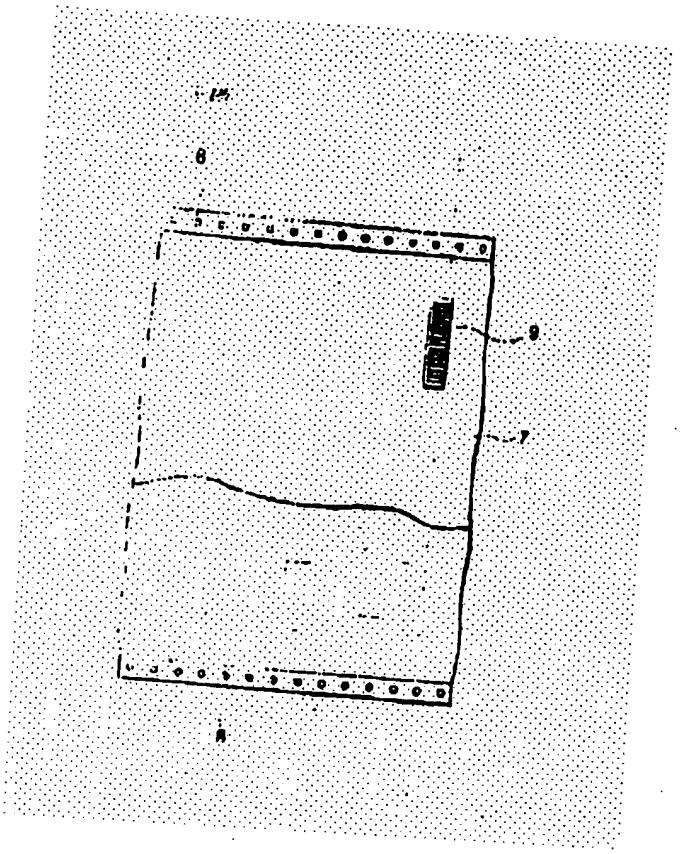

Figure 6:

30(50) Rotating position detecting part

29 Barcode scanner

70 Control part

26 Driving motor